

JAW



Attorney Docket # 5367-220PUS

Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Volker HÄRLE et al.
Serial No.: 10/566,955
Filed: January 30, 2006
For: Method for the Production of a Plurality of
Opto-Electronic Semiconductor Chips and
Opto-Electronic Semiconductor Chip

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Examiner:
Group Art:

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on
August 31, 2006
(Date of Deposit)

Thomas Langer
Name of applicant, assignee or Registered Representative
Signature
August 31, 2006
Date of Signature

LETTER

Enclosed is a copy of the English translation of the International Preliminary Report and the Written Opinion issued in connection with the International Application on which the present U.S. National Phase application is based.

Respectfully submitted,
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August 31, 2006

PATENT COOPERATION TREATY

PCT/DE2004/001593

SK/KH

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF TRANSMITTAL
OF COPIES OF TRANSLATION
OF THE INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY
(CHAPTER I OR CHAPTER II
OF THE PATENT COOPERATION TREATY)
(PCT Rules 44bis.3(c) and 72.2)

To:

EPPING HERMANN FISCHER
PATENTANWALTSGESELLSCHAFT MBH

Ridlerstrasse 55
80339 München
ALLEMAGNE

EINGANG
Epping · Hermann · Fischer
Patentanwaltsgesellschaft mbH

28. Juni 2006

Frist:

Date of mailing (day/month/year)

22 June 2006 (22.06.2006)

Applicant's or agent's file reference

P2003,0490WO

IMPORTANT NOTIFICATION

International application No.

PCT/DE2004/001593

International filing date (day/month/year)

22 July 2004 (22.07.2004)

Applicant

OSRAM OPTO SEMICONDUCTORS GMBH et al

1. Transmittal of the translation to the applicant.



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

2. Transmittal of the copy of the translation to the designated or elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Agnes Wittmann-Regis

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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference P2003,0490WO	FOR FURTHER ACTION		See item 4 below
International application No. PCT/DE2004/001593 ✓	International filing date (day/month/year) 22 July 2004 (22.07.2004) ✓	Priority date (day/month/year) 31 July 2003 (31.07.2003) -	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant OSRAM OPTO SEMICONDUCTORS GMBH ✓			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 10 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input checked="" type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input checked="" type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis.2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 740 14 35	Date of issuance of this report 12 June 2006 (12.06.2006)
	Authorized officer Agnes Wittmann-Regis Telephone No. +41 22 338 89 70

PATENT COOPERATION TREATY

Translation

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference

P2003, 0490WO

Date of mailing
(day/month/year)

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/DE2004/001593

International filing date (day/month/year)

22.07.2004

Priority date (day/month/year)

31.07.2003

International Patent Classification (IPC) or both national classification and IPC

Applicant

OSRAM OPTO SEMICONDUCTORS GMBH

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/DE2004/001593

Box No. 1

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This opinion has been established on the basis of a translation from the original language into the following language _____ which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
- a. type of material
- ☐ a sequence listing
- ☐ table(s) related to the sequence listing
- b. format of material
- ☐ in written format
- ☐ in computer readable form
- c. time of filing/furnishing
- ☐ contained in the international application as filed.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/DE2004/001593

Box No. V	Reasoned statement under Rule 43bis 1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-14	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO
2. Citations and explanations:			
I. Claim 1:			
<p>1. The article "Selective area deposited blue GaN-InGaN multiple-quantum well light emitting diodes over silicon substrates" by J.W. Yang et al., which appeared in Applied Physics Letters, vol. 76, no. 3 (17.01.2000), pages 273-275, XP-12025677, referred to in the following procedure as D1, describes (cf. page 273, right-hand column, second paragraph, to page 274, left-hand column, second paragraph and figure 1) a process for producing a multiplicity of optoelectronic semiconductor chips which each have a multiplicity of structural elements each with at least one semiconductor layer, the process comprising the following process steps:</p> <ul style="list-style-type: none"> - providing a chip assembly base which has a substrate (n⁺ Si substrate) and a growth surface (AlN buffer layer); - forming a mask material layer on the growth surface, having a multiplicity of windows, a mask material being selected in such a manner that a semiconductor material of the semiconductor layer which is to be grown in a 			

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/DE2004/001593

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement

- subsequent process step substantially cannot grow on this mask material or is much less able to grow on this mask material than on the growth surface; and
- substantially simultaneously growing semiconductor layers on regions of the growth surface lying within the windows.
2. The subject matter of claim 1 differs from the above by virtue of the size of the windows and by virtue of the fact that the chip assembly base with the applied material is singulated to form semiconductor chips.
3. Although this is not expressly mentioned in document D1, it will be eminently clear to a person skilled in the art that a wafer having a multiplicity of semiconductor components can be singulated if individual components are needed and, for example, the intention is not to produce a display. Therefore, this feature is to be regarded as implicitly disclosed.
4. The windows tested in document D1 have a size of $300\text{ }\mu\text{m} \times 300\text{ }\mu\text{m}$, and are therefore considerably larger than required by claim 1. However, a person skilled in the art would select the dimensions of the windows according to the desired size of semiconductor components; in this context, a size of $\leq 1\text{ }\mu\text{m}$ does not present any problems in technical terms. This is revealed, for example, by the Article "Selective growth of nanocrystalline Si dots using

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INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability:
citations and explanations supporting such statement

an ultrathin-Si-oxide/oxynitride mask" by N. Miyata et al. which appeared in Applied Physics Letters, vol. 77, no. 11 (11.09.2000), pages 1620 to 1622, XP-012026105, referred to in the following procedure as D2 (cf. page 1620, left-hand column, first paragraph to page 1621, left-hand column, second paragraph, and figure 1). Document EP-A-0 472 221, referred to in the following procedure as D3, also uses a mask spacing of 1.8 μm (cf. column 8, lines 2 to 41 and figures 8A-8F). Documents D2 and D3, like D1, deal with the selected growth of semiconductor material in a window in a mask layer.

5. A person skilled in the art would therefore readily transfer the teaching of document D1 to the size of the windows in the mask layer which he desires and would thereby obtain a process having all the features of claim 1 without having to be inventive. Consequently, claim 1 does not appear to meet the requirement of PCT Article 33(3).

II. Claims 2 to 13:

1. The additional features of claims 2, 4, 5 and 13 are known from document D1, and consequently claims 2, 4, 5 and 13 likewise do not appear to meet the requirement of PCT Article 33(3).
2. The additional feature of claim 3 is within the competence of an average person skilled in the art, since light-emitting components which are defined only by the restricted upper cladding and contact

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability:
citations and explanations supporting such statement

layers are known to a person skilled in the art, and consequently the process according to claim 3 merely represents a variant in this respect on the process according to claim 1. Consequently, claim 3 also does not appear to meet the requirement of PCT Article 33(3).

3. The additional feature of claim 6 is well known to a person skilled in the art of light-emitting semiconductor components. He would deploy this measure according to circumstances and thereby obtain a process having all the features of claim 6. Consequently, claim 6 does not appear to meet the requirement of PCT Article 33(3).
4. The additional feature of claim 7 is known from document D3 (or alternatively D2), and consequently claim 7 does not appear to meet the requirement of PCT Article 33(3).
5. The additional features of claims 8 to 11 are within the competence of a person skilled in the field of light-emitting semiconductor components. Consequently, claims 8 to 11 do not appear to meet the requirement of PCT Article 33(3).
6. The additional feature of claim 12 can be taken from document D3, and consequently claim 12 also does not appear to meet the requirement of PCT Article 33(3).

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/DE2004/001593

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

1. Independent claim 1 has not been drafted in the two-part form defined by PCT Rule 6.3(b). However, in the present case the two-part form would appear to be appropriate. Accordingly, the features known in combination from the prior art (document D1) should have been placed in the preamble (PCT Rule 6.3(b)(i)) and the remaining features specified in the characterizing part (PCT Rule 6.3(b)(ii)).
2. Contrary to PCT Rule 5.1(a)(ii), the description does not cite documents D1 to D3 or indicate the relevant prior art disclosed therein.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/DE2004/001593

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

1. Claim 14 is directed at an object but describes it on the basis of a process for producing it. A "Product-by-process" claim of this type can only be clear within the meaning of PCT Article 6 if the process features are unambiguously apparent from the finished object. This is clearly not the case here.